

Housing cooperatives utilising shallow geothermal energy for heating and cooling

EAI310 and Arroyo Bodonal



Madrid, Spain



COUNTRY BACKGROUND

Spain has great potential for geothermal resources. Shallow geothermal continues experiencing a steady growth, as it becomes more popular and increasingly applied in building refurbishment and new construction buildings. However, geothermal power plants have not been developed in Spain.

STATUS OF THE CASES

Completed

EXPLOITATION TECHNOLOGY

Shallow geothermal system (<500m)

USES

Heating, cooling and domestic hot water

FUNDING

Private (cooperatives)

EAI 310 (2015)

The buildings, sited in the middle of Madrid's district Chamartín, consists of 220 apartments distributed in several buildings provided with heating, cooling and domestic hot water thanks to an exchange geothermal system.

The project started in 2012 with the establishment of the Cooperative EAI310. The founders of the cooperative were a group of parents whose kids went to the same school. The parents joined and decided to bid on an urban plot to build a housing block for their families.

The EAI310 project was planned under the Trias Energetica concept. It uses geothermal energy to cover most of its demand for cooling, heating and domestic hot water. To cover the demand



peaks, conventional systems like boilers and chillers are installed as well. The geothermal system is a combination of a closed vertical system and heat pumps. The project has been entirely financed by the members of the cooperative.

ARROYO BODONAL (2014)

The project was devised by the Arroyo Bodonal Cooperative, which was constituted in 2003. The construction was finalised at the end of 2014.

The building is a sustainable construction and energy efficiency project that provides heating, cooling and domestic hot water to 80 houses in Tres Cantos (Madrid), with up to 80% savings in energy consumption, thanks to the use of geothermal heat pumps (shallow geothermal system) and the integration of ventilation equipment with heat recovery. The building obtained the LEED Platinum certification in 2016.

The integration of geothermal energy in the project was planned from the beginning. No risk with public engagement occurred as the members of the cooperative were the final consumers.

